

3. Research Completed in 1967

The Grammar of HITTING and BREAKING\*

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The contrast between implicit and explicit knowledge is perhaps nowhere greater than in man's use of language. If a person wishes to record and systematize what it is that he "knows" in knowing his language, he cannot simply write it down--he has to discover it first. And in attempting to discover the nature of his linguistic knowledge, he will find that satisfactory statements do not come easily. It is quite certain that the average adult speaker of English simply could not, even if given a year's time, come up with anything like a reliable explanation of how the word EVER is used and what it means. And yet this same person has probably never in his adult life "made a mistake" in his use of this word, or used it in ways that were inappropriate to his intentions.

What a speaker of a language knows about the individual words of his language and the conditions that determine their appropriate use is perhaps the most accessible aspect of linguistic knowledge, but it too is at times extremely subtle and--at least on the face of it--extremely complex. In this paper I hope to explore some of this subtlety and complexity by considering how speakers of English use and understand two very ordinary verbs, HIT and BREAK.

My treatment of these words, and the kinds of evidence I shall appeal to in uncovering their grammatical and semantic properties, will bear some similarity to the style of argument one finds in the writings of the so-called "ordinary language" philosophers, but with two important differences. The first of these is that, unlike words like KNOW, GOOD, OUGHT, REAL, or EXIST, the words HIT and BREAK, in themselves, have no philosophical interest. The second is that a linguist's analysis of words cannot be accounted satisfactory until his observations can be incorporated into a general empirical theory of linguistic structure. We cannot be satisfied that our inquiry has been completed, in other words, until we are convinced that the concepts and principles we have used in organizing our observations are proper to some substantively and formally specific explanatory

theory of the nature of human language. What this means in practice is that the linguist keeps the connection with empirical linguistic theory in mind, at least, whereas the philosopher traditionally has not been expected to do so.

A grammatical description of a language is successful if it accounts for precisely the facility that an ideal speaker of a language has in producing and understanding the grammatical sentences in his language. The knowledge that the speaker brings to bear in exercising this ability may be separated into the general and the specific. One's general knowledge about a language is organized and displayed in its grammar; one's specific knowledge about the individual linguistic objects known as words or "lexemes" is collected and itemized in a dictionary or lexicon of the language. In this paper I shall attempt to determine at least some of the specific things that speakers of English know which account for their ability to use the words HIT and BREAK correctly. Put differently, the goal of this paper is to discover the information that needs to be registered, in one way or another, in the entries for these two words in a scientifically sound dictionary. It is in this sense an exercise in lexicological research.

The reader might at first be inclined to think that the task we have set for ourselves has already been completed--that anyone who wants to learn the lexical facts about HIT and BREAK can do so quite readily by looking the words up in a standard dictionary. It can be shown very easily, however, that there are indeed important facts about words which the makers of dictionaries do not generally bother to tell us. For example, if you look up the words SICK and ILL in a standard dictionary, you will be told that they are synonymous in one of their meanings, but what you will not be told is that although both of these adjectives can occur as predicates, only SICK can occur attributively. Notice examples (1) and (2).

(1) the children are {sick  
ill}

(2) the {sick  
\*ill} children

Or if you look up the word GOOD, you will not find out from the dictionary something that every speaker of English knows, and that every foreign speaker of English needs to know, that GOOD is (apparently) the only adjective in English which can take, in negative and interrogative predicate sentences, the "quantifier" ANY. Notice examples (3) and (4).

(3) is it any  $\begin{Bmatrix} \text{good} \\ \text{pink} \end{Bmatrix}$  ?

(4) they weren't any  $\begin{Bmatrix} \text{good} \\ \text{tail} \end{Bmatrix}$

An ordinary dictionary will not tell us everything that there is to know about HIT and BREAK; there is much we shall have to figure out for ourselves. One of the things that it will tell us, however, is that each of these words has several senses. We shall concern ourselves here only with what might be called their basic or non-transferred meanings. We shall consider their use in expressions about HITTING TREES and BREAKING STICKS, but we shall ignore their use in expressions about HITTING UPON GOOD IDEAS or BREAKING IN A NEW MAN, for example.

The first problem to take note of is that in a grammar which requires subjects in the deep structure<sup>1</sup> representation of

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<sup>1</sup>For a statement of the distinction between "deep" and "surface" representations of the structure of sentences, the reader is referred to Chomsky (1966), pp. 31-51, and Chomsky (1965).

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every sentence, it is necessary to recognize three distinct verbs having the form BREAK and two distinct verbs having the form HIT, and that these distinctions are unaffected by the decision to restrict our attention to the basic meanings of these words.<sup>2</sup>

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<sup>2</sup>Although it is certainly possible to rephrase the facts under examination in such a way that there is one verb BREAK with several distinct uses, it is important to realize that the formal complexity that concerns us here is in no way affected by this reformulation.

The three BREAK verbs may be referred to as BREAK-1, BREAK-2 and BREAK-3. BREAK-1, which is illustrated in sentence (5)

(5) the stick broke

is an intransitive verb which asserts of its subject the particular deformation or change of state we associate with the meaning of the verb.

BREAK-2 is seen in sentence (6)

(6) John broke the stick (with a rock)

It is used for asserting of an object the same change-of-state mentioned in connection with BREAK-1, but BREAK-2 asserts it of its direct object. In general, precisely those noun phrases which can occur as subjects of BREAK-1 can appear as objects of BREAK-2. BREAK-2 assigns an agentive or instigative role to its subject, which is typically animate. As shown in the parenthesized expansion of (6), BREAK-2 may co-occur with a phrase which identifies the instrument, i.e., the inanimate object immediately responsible for the action of breaking.

BREAK-3, seen in sentence (7)

(7) a rock broke the stick

differs from BREAK-2 in accepting inanimate subjects<sup>3</sup> and in not

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<sup>3</sup>There are good reasons for saying that an instrumental noun phrase (in the intended sense) is always underlyingly inanimate. A sentence like THE DOG BROKE THE STICK, when it is used to refer to what happened to the stick when we threw the dog at it, must then be interpreted as containing in its deep structure the noun phrase THE DOG'S BODY. The word BODY, then, being inanimate, is capable of fulfilling an instrumental function in the clause. There are languages in which the distinction between THE DOG as agent and experiencer and THE DOG (= THE DOG'S BODY) as physical object must be made overt. Mohawk, Paul Postal has informed me, is one such language.

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permitting an instrument phrase in the same clause. In other words, a sentence like (8)

(8) \*a rock broke the stick with a hammer

is unacceptable (where A ROCK is not intended metaphorically), because this verb interprets the role of its subject instrumentally, and a simplex clause presumably can only identify one

"instrument".<sup>4</sup> BREAK-2 and BREAK-3 agree in the semantic

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<sup>4</sup> A simplex clause identifies at most one noun phrase as having an instrumental role. This is not to deny that the noun phrase can be compound.

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relation to the direct object.

There are three BREAK verbs, but there are only two verbs with the form HIT (in the meaning we have in mind); and these are HIT-1, seen in (9)

(9) John hit the tree (with a rock),  
and HIT-2, seen in sentence (10)

(10) a rock hit the tree.

HIT-2 parallels BREAK-3 in assigning an instrumental role to its (inanimate) subject, and in not tolerating an instrumental WITH-phrase. That is, sentence (11)

(11) \*a rock hit the tree with a stick  
is unacceptable. And HIT-1 parallels BREAK-2 in assigning an agentive role to its (animate) subject and in accepting an instrumental phrase (as in the parenthesized expansion of (9)). The two verbs HIT agree in their semantic relation to the direct object.

Our two sets of verbs differ in that there is no intransitive verb HIT corresponding with BREAK-1, since there is no sentence of the form (12).

(12) \*the tree hit

This division of BREAK into three verbs and HIT into two verbs is necessary if we wish to include in our descriptions of what we know about individual verbs constraints on the noun phrases that can occur in construction with them, the sentence types in which they can play a role, and the semantic relations which they express among the constituents of the clauses in which they are used.<sup>5</sup> But clearly there is something wrong with

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<sup>5</sup> The nature of these differences between our two verbs and the necessary complexity of their description in grammars which require underlying subjects for all sentences are discussed in detail in Hall (1965).

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a grammatical model, or with an interpretation of a grammatical model,<sup>6</sup> which requires there to be two HITS and three BREAKs.

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<sup>6</sup>In this essay I have only considered interpretations of (5)-(10) that regard them as simplex sentences. A competing view, very convincingly presented in Lakoff (1967), would have them all be complex (involving successive embeddings) and would assign to them deep structures of an extremely abstract character. I know at the moment no empirical data that would be relevant to a choice between these two views, and it seems to me that neither the facts about HIT and BREAK nor the concluding message about the role of a semantic theory would be affected by a choice between them.

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We shall reject this formulation, then, and propose a different description of the facts we have encountered. We shall assume that in some way certain noun phrases can be designated in the deep structure as having an agentive relation to the verbs they are in construction with, others designated as having an instrumental role. Let us label these noun phrases Agent and Instrument, and let us assume that a part of our specific knowledge about each verb in our language is a knowledge of the "kinds" of noun phrases (in the sense we are suggesting) that can occur in construction with it. We are forced to abandon the notions of deep structure subject and deep structure object, if we take this approach, and we must therefore accept a model of grammar in which the subjects and objects that we see in surface structures are introduced by rules.

Temporarily giving the noun phrase THE STICK in examples (5) to (8) the label "X", we may describe BREAK as a verb which requires an X and which permits either an Agent or an Instrument or both. Syntactic rules will specify that if there is only an X, the X noun phrase must be the subject. If there is an Agent, then the X appears as the direct object and the Agent as subject.<sup>7</sup>

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<sup>7</sup>We ignore here the rules that result in "passive" sentences. A more detailed description of the operation of syntactic rules in a grammar of the type suggested here may be seen in Fillmore (1968).

If an Instrument is selected with BREAK, it becomes the subject just in case there is no Agent, but it shows up at the end of the clause, with the preposition WITH, just in case the sentence does contain an Agent. The selectional possibilities for BREAK can be summarized by saying that it can occur in construction with any of the combinations of noun phrases representable by formula (13).

(13) (Agent)(Instrument) X

The parenthesis notation means that the formula holds whether a parenthesized element is present or not. The left-to-right order of the elements is irrelevant.

By assigning the change-of-state asserted by BREAK to the entity identified by the X noun phrase, by allowing the agentive or instrumental roles of noun phrases to be specified directly by the categories Agent and Instrument, by providing for the selection of subjects and objects in the ways mentioned above, and by adopting some formalism which guarantees that noun phrases occurring as Agents are animate while noun phrases occurring as Instruments are inanimate, we can account for all of the syntactic and semantic observations that were presented in connection with examples (5) to (8). It is important to realize that this interpretation does not require the separation of BREAK into three distinct verbs.

By using the same concepts and rules as those we have just proposed, we can similarly simplify our description of HIT. We need to say of HIT, however, that it cannot occur alone with its X element, because sentence (12) is to be excluded. The phenomena we have observed about HIT can be represented as formula (14)

(14) (Agent $\&$ Instrument) X

in which the linked parenthesis notation means that at least one of the two elements so linked must be present.

Of course, this "simplification" would be no simplification at all if the categories and rules, and the grammatical distinctions we must recognize to make the rules work, were applicable



only to the verbs HIT and BREAK. I have developed elsewhere<sup>8</sup>

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<sup>8</sup>Fillmore (1968)

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the outlines of a general grammatical theory which incorporates modifications of the type we have been discussing. These matters need not concern us here, but it should at least be pointed out that the observations we have made about BREAK and HIT are true of many other English verbs as well. Verbs which are semantically similar to BREAK and whose occurrence in clause types is accounted for by formula (13) are exemplified in (15); some English verbs sharing with HIT properties identified by formula (14) are given in (16).

(15) bend, fold, shatter, crack

(16) slap, strike, bump, stroke

Since (13) and (14) identify classes of verbs, it may be the case that certain properties of HIT and BREAK are associated in general with the verb classes to which they belong, other properties being more uniquely associated with the two words as individual lexical items.

In determining what these shared properties might be, we may first note that all of the verbs we chose to associate with BREAK assert that the object identified by the X elements understood as undergoing some kind of change of state. That is, the X element is understood as essentially different after the event symbolized by the verb has "happened" to it. But this does not seem to hold for the verbs classified by formula (14). For the purposes of this essay, we shall refer to verbs like BREAK and BEND as change of state verbs, and verbs like HIT and SLAP as surface contact verbs. The surface contact verbs assert the occurrence of some physical contact between two objects, but from the use of these verbs one cannot necessarily infer that the objects have undergone any essential change.<sup>9</sup> The most

<sup>9</sup>Of course, the surface contact verbs can also be said to identify a "change-of-state" of some kind. In a purely abstract sense, a cheek which has once been slapped is different from the same cheek before the slapping event took place. The semantic structures of some words recognize properties of objects discoverable not in the objects themselves but in their "histories" (words like BASTARD or WIDOW), but such matters have no relevance to the distinction between the two kinds of verbs we are discussing here.

direct way of seeing this fact is by comparing our acceptance of sentence pairs like (17) and (18), in which verbs of these two kinds are contrasted.

(17) I hit the window with a hammer; it didn't faze  
the window, but the hammer shattered

(18) \*I broke the window with a hammer; it didn't faze  
the window, but the hammer shattered.

There is, then, a semantic as well as a syntactic difference between our two classes of verbs. We can capture some of these facts by replacing our temporary symbol X by Place in formula (14), which we associated with the surface contact verbs. For the other X we may use (for want of a better word) the term Object. We can now reformulate (13) and (14) as (19) and (20) respectively, and associate part of the meaning of expressions containing our verbs with these newly introduced categories of noun phrases.

(19) (Agent)(Instrument) Object

(20) (Agent)(Instrument) Place

The lexical entries for BREAK and HIT are assumed to contain references to formulas (19) and (20) respectively.

Change-of-state verbs, as we have said, are verbs which assert of an object a change in time from one "state" to another. An additional syntactic difference between the two verb classes is that stative adjectives can be derived from the change of state verbs, but not from the others. These adjectives describe the later of the two states referred to by their underlying verbs. A consequence of this fact is that sentences like those

in (21) are ambiguous in ways in which sentences like (22) are not.

(21) the window was { broken  
bent  
shattered }

(22) the window was { hit  
struck  
slapped }

The sentences of (21) may be understood either as passives or as descriptions of states while those of (22) can only be understood as passives.

One more syntactic difference between change of state verbs and surface-contact verbs can be seen when the Object or Place noun phrase is a possessed body-part noun. The sentences with surface-contact verbs have paraphrases in which the "possessor" appears as the direct object and the body part noun appears in a locative prepositional phrase.<sup>10</sup> Notice (23) to (26).

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<sup>10</sup>This fact, incidentally, tends to lend support to our choice of the category Place for the "direct objects" or surface contact verbs. Some surface-contact verbs, furthermore, permit either the Place or the Instrument to become the direct object (where there is an Agent to serve as subject), allowing paraphrases as

(i) I hit the roof with the stick

(ii) I hit the stick on the roof

It should be noticed that when the Instrument noun phrase is made the direct object, the Place preposition shows up, and that when the Place noun phrase is made the direct object, the Instrument preposition shows up. This is because the rule for forming direct objects, like the rule for forming subjects, has the effect of deleting the preposition that would otherwise be associated with the category Agent, Place, Instrument, etc.

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(23) I { hit  
slapped  
struck } his leg

- (24) I { hit  
slapped  
struck } him on the leg
- (25) I { broke  
bent  
shattered } his leg
- (26) \*I { broke  
bent  
shattered } him on the leg

If the sentences paired by (23) and (24) are correctly interpreted as paraphrases of each other, and if that means that they are identical in their deep structure, it follows that our investigation into the classes of verbs associated with HIT and BREAK requires an understanding of the precise ways in which English grammar deals with body-part nouns.<sup>11</sup>

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<sup>11</sup>One suggestion on the way in which body-part nouns are to be treated in a grammar is found in the section entitled "The grammar of inalienable possession" in Fillmore (1968).

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I suggested above that the categories Agent and Instrumental were to be used somehow to guarantee that the noun phrases that filled these positions in sentences would be animate and inanimate respectively. Perhaps a more satisfactory way of dealing with the same facts is to say that the categories Agent and Instrument impose a particular interpretation on the nouns that occur "under" them. The sentences we rejected above were sentences in which interpretations imposed on a noun are contradicted by facts that we know about the objects identified by the noun itself. In sentences (8) and (11), for example, we are forced to interpret THE ROCK agentively; but since a rock is not animate, and is therefore known to be incapable of initiating any action, we must either interpret the sentences as meaningless, or as fairy-tale sentences in which THE ROCK was personified (or perhaps the word we need is "animated"). It must remain an open question just what the best treatment of the distinction between normal

and semantically anomalous sentences is, but we can at least be clear about the facts. I shall suggest below that my first formulation is more adequate.<sup>12</sup>

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<sup>12</sup>For a careful discussion of this difference (or rather, a similar difference), see D. T. Langendoen (1968).

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Since we have assigned two different categories to the noun phrases we originally labeled X, we must now ask whether the nouns that occur in the X role with these two verbs must be different (or, alternatively, if nouns are to be interpreted in two different ways depending on whether they are identified as Places or as Objects).

Consider, in this regard, sentences (27) and (28).

(27) I broke the top of the table

(28) I hit the top of the table

In (27), the noun TOP must be referring to the top of a table as a more or less distinct object, while on (28), it can refer either to that or to a portion of the surface area of the table.

This distinction can probably be made clearer with a different kind of example. Suppose you didn't know what TWARGE meant, and you were told two things about some twarge:

(29) John hit the left side of the twarge

(30) John hit the top of the twarge

You might imagine, on hearing (29) and (30), that a twarge was some kind of solid object, and certainly nothing in the two sentences would contradict that assumption. But suppose you were then told two more things about this twarge:

(31) John broke the left side of the twarge

(32) John broke the top of the twarge

This time you would be forced to interpret SIDE and TOP, not as words designating portions of the surface area of the twarge, but as more-or-less separable parts of it. The ideas you could have about what a twarge looked like would be much more constrained after you heard (31) and (32) than before. It is clear,

in other words, that the X nouns that can occur with HIT must be partly different (or differently interpretable) from those which occur with BREAK.

The fact that in sentences (28) and (30) the noun TOP may be understood as referring either to an object or to a location suggests to me that one of the roles of the symbols Agent, Place, etc., is in the selection of nouns, and that they are not restricted in their effect to the imposition of an interpretation on nouns. To appear as an Object, a noun must identify something that can either be an object or a location.<sup>13</sup>

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<sup>13</sup>The distinction could be made more forcefully if we would find nouns which can occur as Places but never as Objects. The word LAP might possibly be such a noun, but I am not sure. At least I am surer about the unacceptability of I BROKE HIS LAP than I am about that of I HIT HIS LAP.

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The ways in which we can understand the nouns that occur with HIT are almost entirely accounted for by referring to the category Place, but those connected with the change-of-state verbs appear to involve idiosyncratic properties of individual verbs. In other words, the kinds of objects that TWARGE might refer to are quite different for the various verbs in (34), but not so for those in (33).

- (33) I { hit  
slapped  
struck  
smote } the twarge
- (34) I { bent  
folded  
shattered  
broke } the twarge.

Here for the first time our observations become lexically specific. We must now consider what there is to say about objects concerning which it is appropriate to use the word BREAK. We have seen already that the object must be in some sense "separable" or

discontinuous with other things, but that aspect of its meaning is perhaps best associated with the category Object.

A sentence like (35)

(35) I broke the dog

can be interpreted as referring to something which happened to a figurine in the shape of a dog, or perhaps to a frozen dog, but not to an ordinary dog. That is because BREAK requires of the entity named by its Object noun that it be "rigid" in some of its dimensions. One can BREAK a dog's bone, but not, ordinarily, a dog.

To show that we are here dealing with a property of the word BREAK, rather than with change-of-state verbs in general, we may compare BREAK and BEND. An object that can be BENT must be "rigid" to the extent that it offers resistance (one doesn't BEND a handkerchief, normally), but it must also be flexible. Then too, there are more constraints on the permitted shapes of objects that can be BENT than for objects that can be BROKEN; but here the best I can do is expect the reader to know what I mean.<sup>14</sup>

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<sup>14</sup>Notice, too, that BEND differs from FOLD in respect to both kinds of properties, resistance and shape. The resistance required when one is correctly using the word BEND is not required for FOLD, and there are further constraints still on the shape of objects that can be FOLDED. One cannot, FOLD, for instance, a string.

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There are, then, these more or less specific, and at least intuitively graspable, properties of objects named by nouns capable of appearing non-anomalously with the verb BREAK. One could make these observations seem more formal, of course, by writing "rigidity" with an initial capital letter and postulating it as a semantic feature of certain nouns, but I believe it would be quite misleading to do so. It seems very unlikely to me that anything is gained by treating these particular "selectional" properties of BREAK (and BEND, FOLD, etc.) in terms of semantic features that are assignable in any natural

way to other words. It is rather that the verb presupposes that the real world objects named by the nouns that occur with it have certain physical properties.

But we have still said nothing about what BREAK means. By comparing BREAK with BEND we can see that the former implies, while the latter does not, the appearance of some discontinuity in an external or internal surface of the object; but if there is more to say than that, it is something that can be said as well by dictionary makers as by linguists.

I am inclined to think that the systematic study of the semantic structure of these words ends pretty much with what we have already noted. To seek criterial differences between BREAK, SMASH, SMATTER, to say nothing of the attempt to discover what distinguish HIT, STRIKE, SLAP, SMITE, BUMP, etc., from each other, is to involve oneself in judgments that may vary widely from person to person and that may individually have nothing to do with other facts about the English language.

Our findings can be summarized by noting that some of the syntactic and semantic properties of our two words can be blamed on the fact that they are words of a particular type; that is, many of the facts we have encountered are instances of general facts about whole classes of words or about uses and interpretations of grammatical categories the existence of which is determinable independently of questions of lexicography.

Both of these verbs can be used transitively, with subjects that are understood agentively as well as with subjects that are understood instrumentally. But BREAK, unlike HIT, can also be used intransitively. BREAK is one of a class of verbs used to express a change of state in some object, and as such it provides, in the form of its past participle, a stative adjective which is capable of describing the object in its latter state.



One of the properties of HIT, namely the existence of certain kinds of paraphrases when it is used with body-part nouns, is apparently accounted for by referring to the ways in which body-part nouns are used as indicators of places rather than as indicators of objects. And constraints on the specific nouns that can occur in construction with these verbs are partly determined by the categories Agent, Instrument, Place and Object.

All of these phenomena are either ascribable to larger grammatical facts or to whole classes of verbs. They fall under what really amounts to our general knowledge of English, and are therefore to be treated only in the grammar. The only word-specific information that is related to the preceding observations is (a) that given in formulas (19) and (21), the information that indicates, for each of these verbs, the syntactic environments in which it is appropriate to use it, and (b) the information that BREAK semantically expresses a change of state.

Apart from the information about their general semantic character (as change-of-state verbs or not) and the needed indication of the environments into which they can be inserted, the only really specific lexical information that we have encountered is (a) the special ways in which speakers of English accept the Object nouns that occur with BREAK and interpret them, and (b) the specific meanings of the two words. The word BREAK can only be appropriately used of an object that is "rigid" in some of its dimensions, and it expresses the appearance of some discontinuity therein. (But why one can BREAK a thread, but not a cloth, is not easily covered by this statement.) The nouns that can occur with HIT apparently do not need to satisfy any requirements not associated with their categorization as Places, and what exactly is meant by HIT, in the sense of the kind of surface contact asserted by HIT in particular (as opposed to STRIKE, etc.), is extremely difficult to pin down.

Certain aspects of the meanings of the two words simply have not been satisfactorily described, and I would not be surprised to find out that they cannot be. Although the ways in

which words acquire meanings and change meanings, as well as the general ways in which human beings learn the meanings of words, will always be of professional concern to linguists as linguists, it may well be that certain aspects of the meanings of many of the specific words in a language are every bit as well "explained" by a handful of examples and an anecdote as by a theory.

Not every change-of-state verb can be used intransitively: consider SMASH and CUT in this respect. Not every verb having syntactic properties of the kind represented by formula (19) is a change-of-state verb: there is a large class of motion verbs syntactically like BREAK, including MOVE, TURN, ROTATE, SPIN, etc. Not every verb that is semantically a change-of-state verb and is syntactically transitive or intransitive in a way analogous to that represented by formula (19) takes an Object: some take animate nouns, such as WAKE (UP). Some change-of-state verbs are understood as affecting a place on an object rather than an object as a whole. CUT and BITE, for example, are of this type, and show paraphrase relations of the type seen in (25) and (26) with body-part nouns. And some change-of-state verbs have associated adjectives that are not identical in form with their past participles. AWAKE is the stative adjective for WAKE (UP), and that must have something to do with the fact that nobody knows what the past participle of WAKE is!

What these observations show is that many of the apparent regularities suggested by this study are slightly spurious, and what that means is that the lexical description of some of the other verbs we have mentioned will be somewhat more detailed than that of BREAK or HIT.

One of the conclusions that can be drawn from this study is that the data we have examined fail to support the distinction

between syntax (as providing a "level" of representation) and semantics. Modifications that are being devised in the theory of deep structure are tending more and more to provide concepts of the kind that can be used quite directly for expressing semantic assertions about linguistic expressions. The designation of noun phrases as Agents, Places, etc., that have been used in my approach, has a role in semantic interpretation, and such properties of verbs as the change-of-state feature we have associated with BREAK are semantic in a more obvious way.

The assignment of such semantic features has, however, clear syntactic consequences. Current developments within the theory of generative transformational grammar suggest that all purely syntactic concepts in grammar relate to the application of syntactic rules, not to the underlying representation of sentences.<sup>15</sup>

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<sup>15</sup>I have in mind unpublished manuscripts by James D. McCawley, John R. Ross, George Lakoff and D. T. Langendoen.

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Certain other matters that have been considered proper to semantics but distinct from syntax include formalizations of the notion of semantic anomaly through semantic projection rules of the type proposed by Katz and Fodor.<sup>16</sup> These authors distinguish

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<sup>16</sup>Katz and Fodor (1963).

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between markers and distinguishers among the features that compose semantic characterizations of lexical items. The distinguishers are those features of the semantic description of a word which are idiosyncratic to that word. The markers are those features which enter into semantic generalizations, features in terms of which various semantic judgments on sentences--including judgments on semantic anomaly--can be formalized and made explicit.

Since a part of the description of certain words is a statement of their selectional restrictions--that is, a statement of the conditions that determine their meaningful use--it should be the case that all semantic anomalies should be describable by a single device. Our consideration of the conditions of appropriateness

for the use of words like BREAK, BEND and FOLD, however, suggest that selectional information can be as idiosyncratic as the kinds of properties that have been referred to as semantic distinguishers. The treatment of the selectional properties of verbs cannot be carried out in a non-ad-hoc way, it seems to me, by seeking features on nouns which do or do not violate restrictions associated with particular change-of-state verbs. In fact, it looks very much as if for a considerable portion of the vocabulary of a language, the conditions determining the appropriate use of a word involve statements about properties of real world objects rather than statements about the semantic features of words.

Some facts about language that have been hitherto treated in terms of a semantic interpretive component viewed as distinct from the syntactic component have been absorbed into the latter--that is, they have been shown to be explainable within a combined syntactic-semantic component. Other facts that have been treated by some as belonging to semantic theory proper are believed to be more correctly assigned to the study of the speakers' practical knowledge of their language. It seems to me that the explanatory scope of semantics as such, to the extent that semantic knowledge can be separated from knowledge of syntax (or syntax-semantics) and knowledge of the world, should be limited to a clarification of the conceptual interrelatedness of lexical items and the semantic judgments on sentences that can be directly accounted for in terms of this interrelatedness.

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